

Undescribed Species of Crane Flies from the Himalaya Mountains (Diptera: Tipulidae), XIII¹

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Abstract: Six new species of Eriopterine crane flies are described, these being *Neolimnophila citribasis* n. sp., from Assam; *N. daedalea* n. sp., Sikkim; *Lipsothrix decurvata* n. sp., Sikkim; *Styringomyia subobscura* n. sp., Assam; *S. tarsatra* n. sp., Nepal; and *Toxorhina (Ceratocheilus) tuberifera* n. sp., Sikkim.

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Neolimnophila citribasis n. sp.

General coloration of body brown, the praescutum with four darker brown stripes, the intermediate pair narrowly separated; antennae 16-segmented; wings brownish yellow, the basal third, including the veins, clear orange-yellow, narrow brown seams over cord and outer veins; R_2 about twice its length before fork of R_{3+4} .

FEMALE: Length about 7 mm; wing 7.8 mm; antenna about 1.4 mm.

Rostrum dark brown; palpi black. Antennae 16-segmented, black, the scape more pruinose; proximal two flagellar segments barely connate, the separating suture narrow but complete, outer segments progressively more slender, the outer pair shorter; longest verticils subequal to the segments. Head brownish gray; vestiture black, from small dark punctures.

Pronotum dark brown. Mesonotal praescutum yellowish brown with four dark brown stripes, the intermediate pair separated only on posterior two-thirds; pseudosutural foveae and tuberculate pits black; posterior sclerites of notum brownish black. Pleura dark gray, dorsopleural membrane brown. Halteres elongate, clear light yellow. Legs with coxae black, gray pruinose; trochanters obscure yellow; femora brownish black, bases yellowed, broadly on the posterior pair, remainder of legs brownish black; tibial spur of fore leg lacking, present on hind pair (middle legs lacking). Wings brownish yellow, the basal fifth clear orange yellow, including the veins; narrow brown seams over cord, outer end of cell 1st M_2 , origin of R_s , and the outer forks, more diffuse and paler on Cu and the outer veins; veins light brown, the yellow bases extended outwardly to include all of Sc and less evidently on other primary veins. Venation: Sc_1 ending opposite fork of R_s ; R_2 about twice its length before the fork of R_{3+4} ; origin of vein R_4 angulated and short-spurred; cell M_1 subequal to its petiole; $m-cu$ just beyond the fork of M .

Abdomen black, the genital segment intensely so; valves of ovipositor horn yellow.

HOLOTYPE ♀, Jhum La, Kameng, North East Frontier Agency, Assam, 7,800 feet, May 13, 1961 (Schmid).

In its general appearance *Neolimnophila citribasis* is most similar to *N.*

¹ Contribution from the Entomological Laboratory, University of Massachusetts.

daedalea n. sp., of Sikkim, being readily told by the extensive brightening of the wing base and the more restricted darkened pattern of the disk. The lack of a distinct flagellar fusion-segment is especially noteworthy. Both *N. daedalea* and *N. fuscinervis* Edwards, of Yunnan, have the basal segment of the flagellum elongate, resulting from four fused segments, with ten free segments beyond.

Neolimnophila daedalea n. sp.

General coloration of thorax blackened, the praescutum with four darker stripes, the intermediate pair vaguely separated; wings light yellow, most of the veins heavily seamed with brown, cells *C* and *Sc* conspicuously brownish yellow; a darkened cloud in outer half of cell *R* behind *Rs*.

MALE: Length about 5.5 mm; wing 8 mm; antenna about 1.2 mm.

FEMALE: Length about 6–6.5 mm; wing 8–8.2 mm; antenna about 1.4 mm.

Rostrum and palpi black. Antennae black, scape pruinose; fusion-segment of flagellum involving four segments, with ten free segments beyond. Head brownish gray; anterior vertex broad.

Pronotum blackish gray. Mesonotal praescutum with four blackened stripes, the intermediate pair only vaguely separated, the lateral stripes poorly indicated, lateral margins of segment light gray; posterior sclerites of notum black, very sparsely pruinose. Pleura gray. Halteres light yellow. Legs with coxae black, pruinose; trochanters brown; remainder of legs brownish black, femoral bases very narrowly paler. Wings strongly light yellow, the prearcular field bright yellow; a heavy brown pattern over the cord, outer end of cell 1st *M*₂ and vein *Cu*, narrower but still conspicuous on veins beyond cord with the exception of *M*₁₊₂, *M*₁ and *M*₃₊₄; no darkenings on *M* or 1st *A*; a conspicuous marking in outer half of cell *R* behind *Rs*; cells *C* and *Sc* brownish yellow. Venation: *R*₂ some distance before fork of *R*₃₊₄, subequal to *R*₃; position of *r-m* slightly variable, in cases at or just before the fork of *Rs*.

Abdomen dull black. Valves of ovipositor long and straight, tips of cerci with coarse yellow setae.

HOLOTYPE ♀, Kalep, Sikkim, in *Rhododendron* association, 12,100 feet, June 18, 1959 (Schmid). Allotype, ♂, Yumtang, Sikkim, in *Rhododendron* association, 12,140 feet, June 27, 1959. Paratypes, 3 ♂♂, with the allotype; 1 ♀, Chachu, Sikkim, 11,500 feet, June 29, 1959 (Schmid).

Other Himalayan species include *Neolimnophila genitalis* (Brunetti), with unpatterned wings, together with *N. bifusca* Alexander and *N. citribasis* n. sp., previously described in the present report. In the higher mountains of western China still other species are found, including *N. fuscinervis* Edwards, *N. perreducta* Alexander and *N. picturata* Alexander, all with the details of wing pattern and venation distinct.

Lipsothrix decurvata n. sp.

Pronotum and anterior end of praescutum brownish black, the remainder of the praescutal stripes paler, pleura light yellow; femora yellow, tips conspicuously brownish black; wings faintly darkened, prearcular and costal fields more brownish yellow; *Rs* relatively long, nearly twice *R*₂₊₃₊₄, vein *R*₄ very strongly decurved outwardly, its tip at or beyond the wing apex, cell 1st *M*₂ short-rectangular.

MALE: Length about 7–7.2 mm; wing 7.5–7.8 mm; antenna about 2.7–2.8 mm.

Rostrum brownish yellow; palpi black. Antennae relatively long, as shown by the measurements; scape and pedicel brownish yellow, flagellum brownish black; segments long-subcylindrical, verticils short and sparse. Head light brown.

Cervical region and pronotum brownish black. Mesonotal praescutum extensively obscure yellow, with a light brown central stripe, anterior half more brownish black, this being a continuation of the pronotal darkening, region of the suture yellowed; scutal lobes and posterior sclerites darkened, including the pleurotergite. Pleura light yellow. Halteres with stem pale, knob darkened. Legs with coxae and trochanters yellow; femora yellow, tips conspicuously brownish black; tibiae obscure yellow, tips more narrowly darkened; tarsi obscure yellow; claws long, with a major subbasal spine and two or three smaller more proximal denticles. Wings faintly darkened, prearcular and costal regions more brownish yellow, stigma still darker; veins brown, more yellowish brown in the brightened fields. Macrotrichia of veins very long. Venation: Sc_1 ending just beyond fork of the long R_s , Sc_2 near its tip; R_2 faint, subequal to or shorter than R_{1+2} ; vein R_4 very strongly decurved outwardly, ending at or beyond the wing tip, cell R_3 at margin slightly more extensive than cell R_2 ; cell $1st M_2$ short-rectangular, less than one-half the veins beyond it; $m-cu$ about one-third its length beyond the fork of M , in cases close to the fork.

Abdomen including hypopygium, dark brown. Male hypopygium with the interbase slender; phallosome strongly developed, about as in *malla*.

HOLOTYPE ♂, Chateng, Sikkim, 8,700 feet, June 12, 1959 (Schmidt). Paratopotypes, 4 ♂♂, on two pins.

Lipsothrix decurvata is close to *L. malla* Alexander, of Nepal, differing in details of body coloration and in the venation, especially cell $1st M_2$ and the radial field, including the more decurved vein R_4 .

Styringomyia subobscura n. sp.

Allied to *obscura*; general coloration of body black; legs blackened, middle and hind femora each with a narrow yellow subterminal ring, posterior tarsi whitened; wings slightly suffused, virtually unpatterned; male hypopygium with a long sinuous rodlike spine near base of inner arm of dististyle; apex of phallosome bilobed.

MALE: Length about 6.5 mm; wing 4.6.

FEMALE: Length about 6 mm; wing 4.5.

Rostrum and palpi black. Antennae with proximal five or six segments black, the outer ones brownish yellow; flagellar segments oval. Head brownish black.

Thorax black, sparsely gray pruinose to appear dull; central region of sternum somewhat paler. Halteres with stem dark brown, knob brownish black. Legs with coxae light brown; trochanters brownish yellow; remainder of fore legs uniformly blackened; middle femora restrictedly obscure yellow at base, remainder brownish black with a narrow obscure yellow ring some distance before tip, tibiae brownish black, the extreme base pale, tarsi brownish black, the extreme bases vaguely paler; posterior legs chiefly black, femur with a conspicuous pale yellow subterminal ring, the darkened tip nearly three times as extensive, tibiae brownish black, tarsi whitened, the extreme tips of the individual segments pale brown, terminal segment uniformly darkened. Wings beyond cord with a slight darkened suffusion, basal cells more whitened; a dusky seam along vein Cu involving both cells; veins dark brown. Venation: Anterior branch of R_s more nearly erect than in *obscura*.

Abdomen black. Male hypopygium generally as in *obscura*, differing in all details, especially of the dististyle and phallosome. Outer rod of dististyle without basal setae; outer arm large, its surface with numerous scattered setae; margin with an unbroken

comb of strong spinoid setae, those at either end of row slightly longer; inner arm of style more slender, with two terminal combs, two strong similar spines near base, and a long sinuous rodlike spine on outer margin near base; origin of dististyle with a blackened rod, its apex dilated into a head. Phallosome on either side with a recurved or pendant lobe, the obtuse apex blackened; in *obscura* this represented by a single powerful terminal spine. HOLOTYPE ♂, Chapai, Kameng, North East Frontier Agency, Assam, 700 feet, February 26, 1961 (Schmid). Allotype ♀, Bhairabkunda, Kameng, 700–1,000 feet, March 5, 1961 (Schmid).

The closest relatives of the present fly are *Styringomyia obscura* Brunetti and *S. schmidiana* Alexander, both with the hypopygial structure quite distinct. The male hypopygium of *obscura* has been described and figured by the writer (**Philippine Jour. Sci.** 86: 447–448, pl. 4, fig. 56; 1957).

STYRINGOMYIA *tarsatra* n. sp.

Size small (wing 4.5 mm or less); general coloration of mesonotum dark gray and black, ventral half of thoracic pleura abruptly yellow; halteres black; femora black, bases and a narrow subterminal ring yellow, all tibiae and tarsi black; wings with a weak brownish tinge, the basal third more whitened; abdomen black; male hypopygium with the modified sternal setae apical in position; outer lobe of basistyle with a single modified seta; intermediate and inner arms of dististyle with rows of blackened pegs; phallosome unusually small and inconspicuous, the blackened apex rounded.

MALE: Length about 6.2–6.5 mm; wing 4–4.5 mm.

FEMALE: Length about 6 mm; wing 4.2 mm.

Rostrum and palpi black. Antennae with scape, pedicel and proximal flagellar segments black, intermediate segments paler, the outer ones again blackened; pedicel enlarged, flagellar segments oval. Head dark brown to brownish black, sparsely pruinose.

Pronotum dark brown, obscure yellow medially. Mesonotum gray, patterned with black including sublateral praescutal stripes and margins to the scutal lobes; scutellum with a central pale yellow spot. Pleura conspicuously blackened above, including the dorsopleural membrane, lower half abruptly yellow, including also the coxae of all legs. Halteres black. Legs with trochanters yellow, femora black, the bases restrictedly paler, with a narrow obscure yellow subterminal ring at about twice its length from the tip; tibiae and tarsi of all legs black. Wings with a weak brownish tinge, the basal third or more whitened; veins brown. Venation: Anterior branch of *Rs* oblique; cell *2nd M*₂ narrowly to more broadly sessile.

Abdomen black, hypopygium brownish black. Male hypopygium with the tergite narrowed outwardly, apical lobe provided with dense retrorse setae; sternite long and narrow, the two modified setae terminal, placed at outer apical angles of sternal lobe, surface microscopically setulose. Basistyle with a single modified seta, subequal in length to its basal tubercle. Dististyle with outer arm bearing a single weak seta at near one-third the length; intermediate and inner arms provided with blackened pegs; inner arm with a slender pale rod on outer margin, the inner edge near base with a group of about 10 to 12 very long setae. Phallosome unusually small and inconspicuous, the outer end rounded and blackened.

HOLOTYPE ♂, Parewavir, Nepal, March 28, 1957 (Coher). Allotype ♀, Amlekhgang, Nepal, 520 meters, July 26, 1957 (Coher). Paratopotypes, 6 ♂♂, with the type, March 15–28, 1957 (Coher).

Other somewhat similar regional species include *Styringomyia obscura* Brunetti, *S. schmidiana* Alexander, and *S. subobscura* n. sp., from which the present fly differs in the small size, details of coloration, including the uniformly blackened tarsi of all legs, and in the details of hypopygial structure, including particularly the dististyle and phallosome.

Toxorhina (Ceratocheilus) tuberifera n. sp.

General coloration of head and thorax gray, the praescutum with three virtually confluent brown stripes; halteres and legs black, the femoral bases restrictedly yellow; wings subhyaline, base more yellowed, anterior branch of *Rs* sinuous, cell *R*₁ narrowed at margin; abdomen brownish black; male hypopygium with a strong tubercle near proximal end of basistyle; dististyle terminal, the marginal tubercle small; arms of aedeagus very short.

MALE: Length, excluding rostrum, about 5 mm; wing 5 mm; rostrum alone about 3 mm.

FEMALE: Length, excluding rostrum, about 5.5 mm; wing 5 mm; rostrum about 3 mm.

Rostrum black, more than one-half the length of wing. Antennae black. Head black, sparsely pruinose, without a corniculus; anterior vertex relatively narrow, slightly wider than the diameter of the scape.

Cervical region and pronotum blackened. Mesonotal praescutum with three virtually confluent brown stripes, the median extension darker in front, lateral praescutal borders gray; posterior sclerites of notum black, gray pruinose, scutal lobes more infuscated. Pleura black, sparsely pruinose to appear plumbeous. Halteres black throughout. Legs with coxae brownish black, trochanters brownish yellow; remainder of legs black, femoral bases restrictedly yellowed. Wings subhyaline, the base more yellowed; veins brown, those at wing base more brownish yellow. Certain veins beyond cord with sparse trichia, including both sections of *R*₅ and distal section of *M*₁₊₂; a single trichium near outer end of vein *M*₃. Venation: *Sc*₁ ending just beyond origin of *Rs*, *Sc*₂ before the origin; anterior branch of *Rs* sinuous but more erect than in *mesorhyncha*, cell *R*₁ narrowed at margin; *Rs* nearly as long as basal section of *R*₅; *m-cu* before fork of *M*. In the allotype female both wings have cell *M*₂ open by the atrophy of *m*.

Abdomen, including hypopygium, brownish black. Male hypopygium with a strong tubercle on mesal face of basistyle near proximal end, provided with several strong black setae. Dististyle single, terminal in position, extended into a long slender beak bearing a low lateral flange, outer margin shortly before midlength with a small tubercle. Interbases appearing as narrow blades. Arms of aedeagus unusually short, less than the distance separating them at bases.

HOLOTYPE ♂, Lathong, Sikkim, 6,560 feet, July 26, 1959 (Schmid). Allotopotype, ♀.

The closest relative is *Toxorhina (Ceratocheilus) mesorhyncha* Alexander which differs in the venation of the radial field and in the hypopygial structure, especially the dististyle and aedeagus.

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